

BRIDGE TYPE SELECTION

PROPOSED BRIDGE REPLACEMENT OF

**BRIDGE No. E-10-011 (0PW)
CHURCH STREET OVER WATER KEYUP BROOK
ERVING, MASSACHUSETTS**

PROJECT FILE No. ENG20-0376



SUBMITTED TO:

Town Administrator
Town of Erving, MA
12 East Main Street
Erving MA, 01344

4/7/2022

PREPARED BY:

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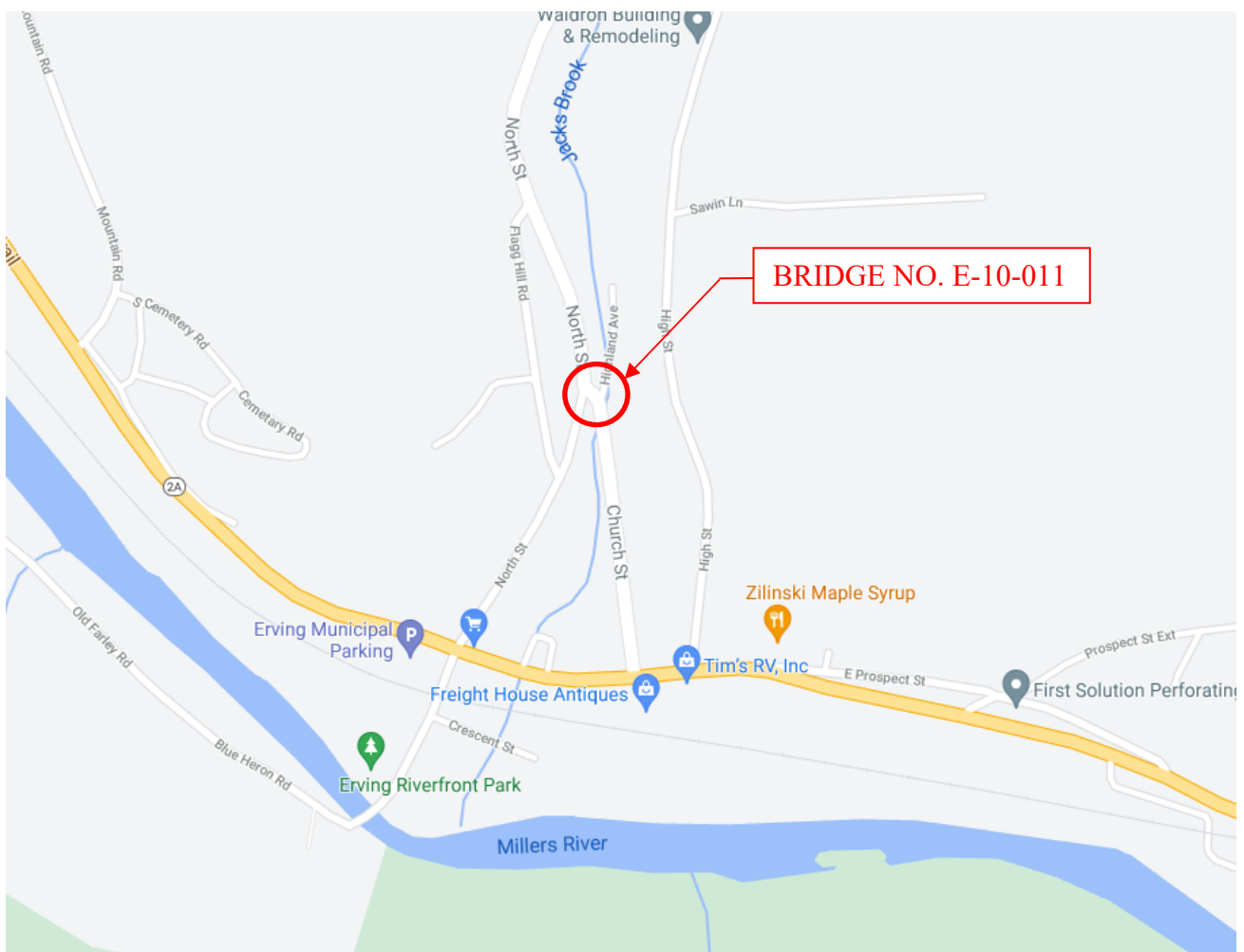
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1.0 PROJECT LOCATION

- | | | |
|-----|-----------------------------|--------------------|
| 1.1 | <u>City or Town:</u> | Erving, MA |
| 1.2 | <u>District:</u> | 4 |
| 1.3 | <u>Bridge Number:</u> | E-10-011 |
| 1.4 | <u>BIN:</u> | 0PW |
| 1.5 | <u>Structure Number:</u> | E10011-0PW-MUN-NBI |
| 1.6 | <u>Roadway on Bridge:</u> | Church Street. |
| 1.7 | <u>Feature Intersected:</u> | Keyup Brook |



2.0 DESCRIPTION OF EXISTING SITE CONDITIONS

2.1 Description of Existing Bridge Structure:

- The bridge was constructed in 1940.
- Currently, the bridge is open to traffic, however the bridge is posted (2-axle limited to 12ton, 3-axle limited to 18 ton, and 5-axle limited 29 ton). There is an additional restriction with commercial vehicles over 2.5 tons excluded from traveling on the road.
- The bridge is oriented north to south.
- The bridge has an overall width of approximately 33'-0" and overall span length of 16'-0".
- The bridge has a curb-to-curb width of approximately 29'-0".
- The bridge carried two (2) 12'-2" \pm travel lanes with a 4'-0" sidewalk on west side of the bridge and an 8" safety curb on the east side of the bridge.
- The bridge is a single span cast-in-place concrete slab bridge.
- The wearing surface is comprised of bituminous concrete approximately 6" thick on the bridge.
- The substructure consists of granite masonry walls that are faced with concrete. The abutments are battered out 1"/1' down to the streambed.
- The horizontal clearance between abutments is 16'-0".
- The vertical clearance between the top of the arch and the streambed is approximately 7'-6".
- The streambed is partially lined with a 4" thick reinforced concrete slab under the bridge.

2.2 Description of Approach Roadway:

- The roadway is classified as Major Collector and is not part of the National Highway System.
- The ADT was 905 vehicles per day with 6% truck traffic as noted in the 2021 SI&A.
- The approach roadways are comprised of two (2) 12.5' \pm lanes and one (1) 4' \pm sidewalk on the west side of the bridge.
- The existing (original) design speed through the bridge site is 25 mph.
- The alignment of Church Street contains a horizontal curve through the bridge that turns the road westerly to tie into North Street. The vertical alignment through the bridge slopes upward at a constant 3% slope as Church Street approaches the intersection with North Street.
- North Street intersects Church Street approximately 30' north of the bridge, Highland Ave intersects with Church Street approximately 10' south of the bridge, and Route 2 intersects Church Street approximately 1000' south of the bridge.

2.3 Description of Feature under the Bridge Structure:

- The feature under the bridge is Keyup Brook.
- The Brook runs east to west under the bridge, and bends to the southwest on the downstream end.
- The brook is approximately 16' wide and 6" deep.
- The banks are channelized at the stream approaches with masonry walls lined with cast-in-place concrete. There is also a section of masonry walls that sits on a concrete base wall.
- The channel upstream and downstream is in fair to poor condition. Heavy rainfall events in July 2021 have eroded portions of these walls as well displaced some of the rocks that make up the channel walls.

- There is a pipe that runs northwest to southeast over the stream bed concrete slab and sits directly in the brook flow. This pipe is partially directing the flow of the brook towards the south abutment.

2.4 Description of Existing Hydraulics at the Bridge Site:

- The Keyup Brook watershed upstream of Church Street bridge crossing is estimated to be 7 mi². Based on the road classification, the design storm frequency is 25 years.
- The bridge is located upstream of a FEMA flood zone.
- The design storm is based on the roadway classification and is a 25-year storm per MassDOT Bridge Manual Table 1.3.4-1. The discharge for the 25-year design storm is 851 cubic feet per second based on StreamStats data. Flows for the 2-, 10, 50- and 100-year storm events were also obtained from StreamStats data.
- HEC-RAS, hydraulic analysis program was used to evaluate the hydraulics at the crossing. Existing and proposed conditions hydraulic analysis was performed to verify the hydraulic impacts of the proposed changes.
- There is approximately 4.5 – 5.0 feet of freeboard for the 25-year design storm. The existing bridge conveys up to a 100-year storm event without overtopping.
- The hydraulics at the site are largely controlled by the hydraulic opening of the bridge as well as the capacity of the channel upstream and downstream.
- The proposed water surface elevations and velocities closely match the existing conditions. Proposed conditions will also have approximately 4.5 – 5.0 feet of freeboard for the 25-year design storm.
- There is no evidence of existing scour. The bottom of the bridge and the channel bank walls within the immediate vicinity is a manmade concrete channel. The proposed bridge and the channel walls will be maintained as well as any minor repairs to channel walls will be performed. The proposed bridge will be scour resistant.

2.5 Description of All Utilities within the Bridge Site:

- There is a buried 8" Sanitary Sewer near the east side of the bridge that runs down Highland Avenue and then continues south down church street. There is a sewer manhole approximately 14'0" (measured down the current Church Street baseline) from the existing east abutment.
- There is a buried 8" Sanitary Sewer to the west of the bridge that runs down North Street. This sewer is on the west side of North Street and likely won't be affected by construction.
- There is an abandon 8" water line that crosses through the abutments on each side of the bridge. This pipe has become disconnected under the bridge and now rests on the concrete slab in the brook. This utility is out of service and can be removed as part of this project.
- There is a catch basin on the west side of the bridge with a buried 12" CMP storm drain that outlets into the brook approximately 12 feet to the south of the west abutment
- There is also a buried 18" CMP storm drain that runs down North Street and outlets into the brook approximately 37 feet to the south of the west abutment
- There is a buried 12" CMP storm drain on the east side of the bridge with a catch basin approximately 12 ft from the southeast corner of the bridge.
- There is Overhead Utilities that run diagonally over the bridge from the southwest corner to the northeast corner of the bridge.

2.6 Description of Environmentally Sensitive or Cultural Resource Areas Affecting the Bridge Site:

- Massachusetts Cultural Resource Information System (MACRIS) database indicates one (1) historic home in the area (20 North Street) but it is not in the immediate vicinity of the bridge.
- The bridge site is within the 200-ft riverfront area.
- The bridge site is located within a 100-year flood zone.
- The bridge site borders a vegetated wetland.

2.7 Hazardous Materials:

- An adjacent property (28 North Street) site has a reported fuel oil spill as documented in the included Energy & Environmental Affairs reports.

3.0 DESCRIPTION OF PROJECT PARAMETERS AND CONSTRAINTS

3.1 Description of Proposed Roadway Cross Section:

- The proposed roadway cross section over the bridge is to have a varying out-to-out width of 36' – 2" at a minimum. This width includes two (2) 12'-0" travel ways, one (1) varying sidewalk 5'-6" minimum on the south side, one (1) varying shelf 2'-9 1/4" minimum on the north side, with an additional 14" for a bridge rail on either side.
- The cross section will have a cross slope of 1/4" per foot and will have a curb reveal of 8" which will transition to a 6" reveal off of the bridge, and then transition to the existing reveal.
- The roadway is not on the National Highway System (NHS).
- The design speed of the roadway will be 25 mph with an ADT of 905 vehicles per day, 6% of which are trucks.
- The vertical alignment will closely match the existing vertical alignment.

3.2 Project Traffic Management:

- The bridge will remain closed for the duration of the construction.
- A proposed detour will be utilized during construction.
- See Section 9.7 for the Traffic Detour Diagram.

3.3 Proposed Clearances:

- The proposed vertical clearance under the bridge (6'-6") is slightly less than the existing maximum clearance (7'-0 1/2") to account for an increased span and the required deeper structure.
- The existing abutments are to remain so the existing horizontal clearance between the existing abutments will not be changed. However, above the existing abutments there will be a wider 28'-0" opening consisting of the existing 16'-0" opening and a 6'-0" shelf above each existing abutment.

3.4 Hydraulic Data:

Hydraulic Design Data

Drainage Area	7 Square Miles
Design Flood Discharge	851 Cubic Feet Per Second
Design Flood Frequency	25 Years
Design Flood Velocity	18.38 Feet Per Second
Design Flood Elevation	487.09 Feet, NAVD

Base (100-Year) Flood Data

Base Flood Discharge	1,260 Cubic Feet Per Second
Base Flood Elevation	487.91 Feet, NAVD

Flood of Record

Discharge	Unknown
Frequency	Unknown
Maximum Elevation	Unknown
Date	Unknown

History of Ice Floes: None Documented in NBIS Database

3.5 Preliminary Geotechnical Data:

- Subsurface conditions at the bridge were explored on May 25, 2021 by advancing two borings (B-1 and B-2). The depths referenced below are relative to the existing surface grades at the boring locations.
- Boring B-1 was performed behind the northwest abutment. The boring encountered dense, gravel and sand fill to a depth of about 7 feet overlying medium dense, native sand (SP) to a depth of 10 feet. Below the native sand, very dense, possible weathered rock was encountered to a depth of 14.5 ft. Bedrock was cored from about 14.5 ft. to 23.6 ft. Bedrock Rock Quality Designations (RQDs) ranged from 81 to 93 percent.
- Boring B-2 was performed approximately 60 ft. south of the southeast abutment due to overhead utilities. The boring encountered medium dense, sand fill to a depth of about 3.5 feet overlying medium dense to very dense native gravel (GW/GW-GM) to about 11.5 ft. Below the native gravel, very dense, silty sand (SM) and very stiff, silt with sand (ML) to about 18.5 ft. A very dense glacial till was encountered from about 18.5 ft. to 19.2 ft. Sampler and auger refusal were encountered at approximately 19.2 ft. Sampler and auger refusal may indicate the presence of boulders, bedrock, or very dense soils.

3.6 Constraints Imposed by Approach Roadway Features:

- Approach roadway constrains vertical and horizontal alignment as well as adherence to existing lane and sidewalk widths.
- There is an intersection on the north side of the bridge with North Street approximately 30 ft from the bridge and an intersection on the south side of the bridge with Highland Ave approximately 10ft from the bridge.
 - The intention on the north side of the bridge is to square off the road to North Street to slow the traffic down when entering Church Street. In order to do this, the roadway will need to curve over the bridge.
 - The intention on the south side of the bridge is to avoid impacting the intersection with Highland Ave as there is limited town right of way, so shifting the intersection will be challenging.

3.7 Constraints Imposed by Feature Crossed:

- Existing structure provides 2'-0" of free board above the 100-year flood elevation so there is room to lower the bridge if required. Confirming the low chord stays above the 100-year flood was considered when studying the proposed the superstructure options.
- Control of water is required during construction of the proposed substructure. The intent is to leave the existing substructure in place to act as control of water during construction. If the slope paving banks upstream are removed, then sandbags will be utilized to direct water into the existing opening.
- Excavation for the proposed substructure will occur solely behind those elements used for control of water.

3.8 Constraints Imposed by Utilities:

- The existing sewer line on the east side of the bridge will restrict horizontal limits of excavation and construction. The substructure will consider the need to avoid interference with the sewer line and sewer manhole.
- The existing drainage structures on both the east and west sides of the bridge will restrict horizontal limits of excavation and construction. The substructure will consider the need to avoid and possibly relocate the drainage structures and outlet pipes.
- The existing abandon water line will need to be capped properly which may require localized excavation in that area and partial demolition/repair of the existing abutment.
- Overhead wires may be protected or relocated as necessary to complete construction. The wires may limit the demolition and erection process. Utility poles (UPL8 and UPL9) on each side of the bridge are located within the vicinity of the bridge but should not be affected by the construction.

3.9 Constraints Imposed by Environmentally Sensitive Areas:

- Because of the presence of wetland resources [the nearby perennial stream (Keyup Brook), bordering vegetated wetlands, and 100-year flood zone near the proposed work area, the limit of work may be constrained.
- Work near wetland resource areas will also likely require various environmental permits, depending on amount of impacts and distance from wetland resources.

3.10 Constraints Imposed by Cultural Resource Areas:

- There are one (1) historic houses in the area of the proposed construction but not within the project limits. The address is 20 North Street.

3.11 Hazardous Material Disposition:

- Handling of all materials containing lead or other hazardous materials must comply with all Federal, State, and Local Regulations for the proper containment, handling disposal and/or recycling of hazardous materials.

3.12 Other Project Constraints:

- The existing wingwall walls and subsequent brook retaining walls are in poor shaped and will required rehabilitation if not addressed as part of this project.
- The northeast corner of the bridge is located directly adjacent to a property line which will constrain the bridge construction and road tie in a Highland Avenue.
- The existing bridge has a heavy skew with respect to the brook below which limits proposed bridge structure types and complicated constructability.
- The roadway over the bridge currently has a sub-standard curve coming into the intersection of Church Street and North Street. Having a curve on the bridge complicates design and construction.

4.0 PROPOSED SUBSTRUCTURE ARRANGEMENT, SPAN, AND FOUNDATION TYPES

4.1 Shallow Foundations

- Shallow foundations will be easier to construct and will save time and money compared to deeper foundations.
- Based on boring log information, the soil will provide a high allowable bearing pressure making shallow foundation adequate here.
- Retaining the existing abutments will eliminate the possibility of scour occurring at the foundation level so shallow foundations can be constructed at a higher elevation than would be required at the existing bridge location.
- There are no buried utilities that would be affected by bearing a shallow foundation behind the existing abutments.

5.0 PROPOSED SUPERSTRUCTURE TYPE

5.1 Proposes Superstructure Types

5.1.1 Precast Concrete Three-Sided Frame

- Clear span of 28'-0"
- Five 6'-0" wide adjacent precast three-sided frames with two varying frames on the south side frames, totaling to 46'-9.25" on the east side and 40'-0" on the west side out-to-out.
- The top slab of the three-sided frame shall be 14" deep.
- The proposed low chord is at approximately as the same height at the existing low chord.
- Highest possible low chord, and since the existing abutment is partially cutdown this structure has the largest hydraulic opening.
- Existing abutments will be cut-down approximately 2'-0" to span the frames over and bear behind the existing abutments.



Precast Concrete Three-Sided Frame Examples

5.2 Proposed Bridge Railing Types

5.2.1 *Cast-in-place Concrete Parapet Bridge Rail Using Formliner to Print Design*

- Allows for construction on a curve.
- Allows for masonry or custom design to be cast into the faces of the barrier utilizing form liners or custom from templates.
- Aesthetically pleasing
- Not a MassDOT Standard Rail



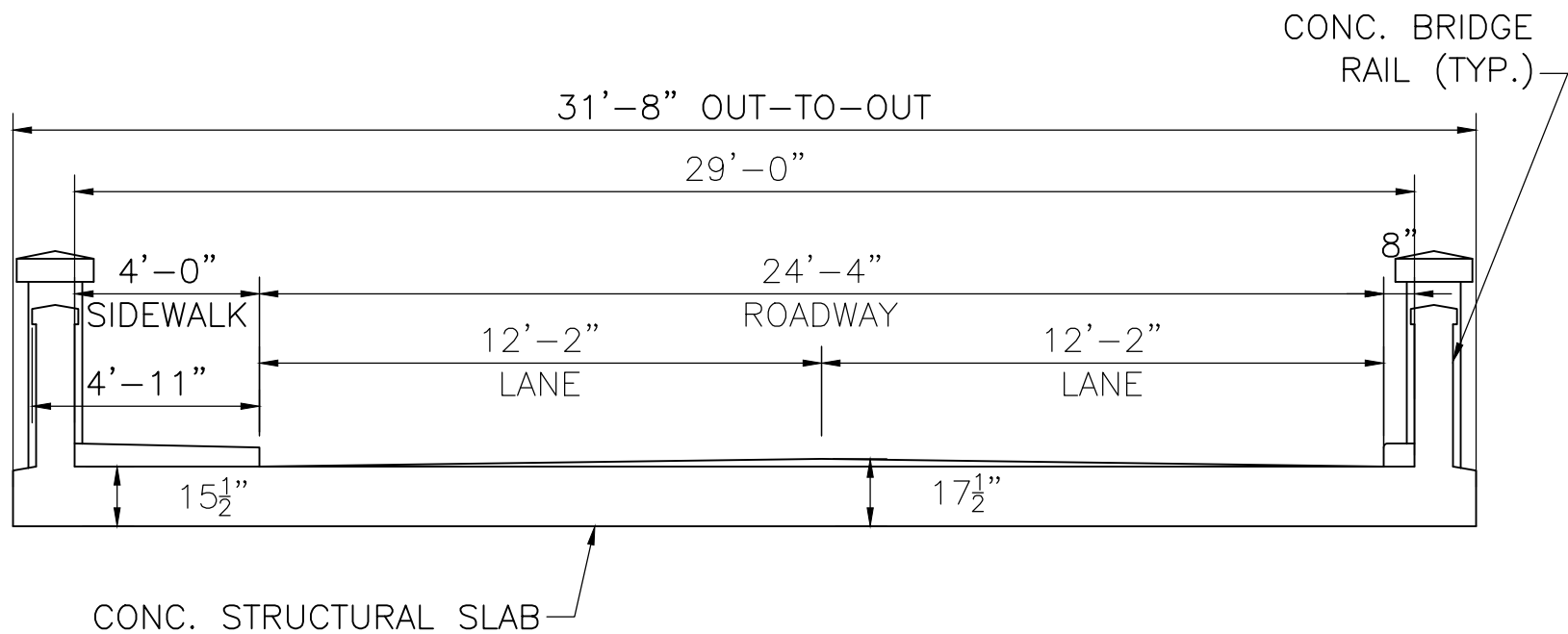
Cast-in-place Concrete Parapet Bridge Rail Using Formliner to Print Design Examples

6.0 PROPOSED BRIDGE STRUCTURE TYPE

- **Precast Concrete Three-Sided Frame** is recommended for this bridge site, as it has a shallow superstructure, allows for construction to occur outside of the brook, and provides the largest hydraulic opening for this site.
- The precast frame structure provides a sleek finished product that requires less maintenance and limits joints/susceptible areas that are typically present on a conventional bridge.
- A shallow foundation allows for quicker and less costly construction while still providing a structurally stable product.
- The precast frame can be placed over the existing abutments, limiting the substructure demolition and reducing permitting requirements.
- Precast units also allow for an expedited construction duration during the road closure period.
- The precast frame allows for all three bridge rails discussed in this report to be installed on it so it provides versatility and allows for the town to decide what the finished product will look like.

7.1

Existing Drawings

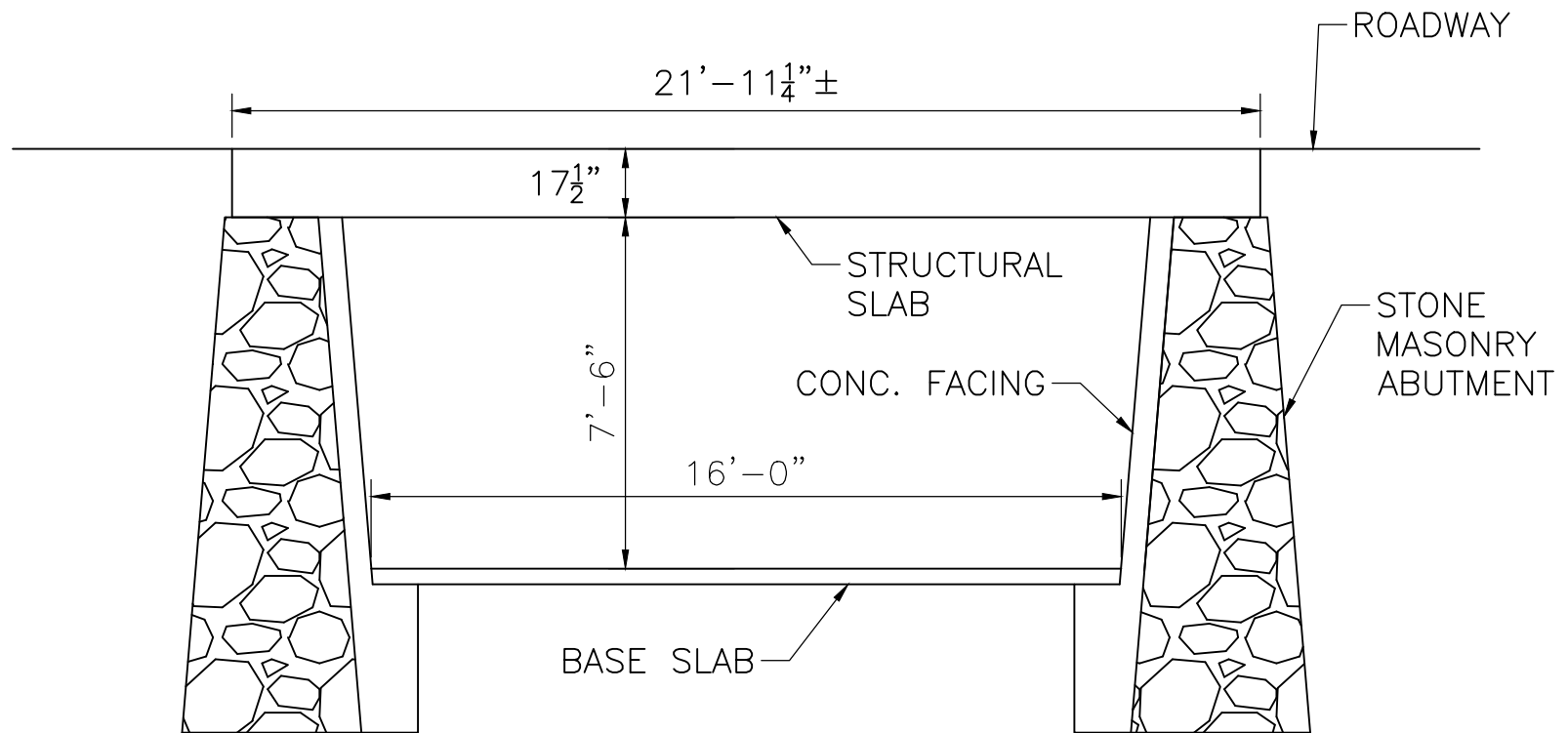


SINGLE SPAN CONCRETE SLAB - EXISTING CROSS SECTION

BRIDGE NO. E-10-011

CHURCH STREET OVER KEYUP BROOK
ERVING, MASSACHUSETTS

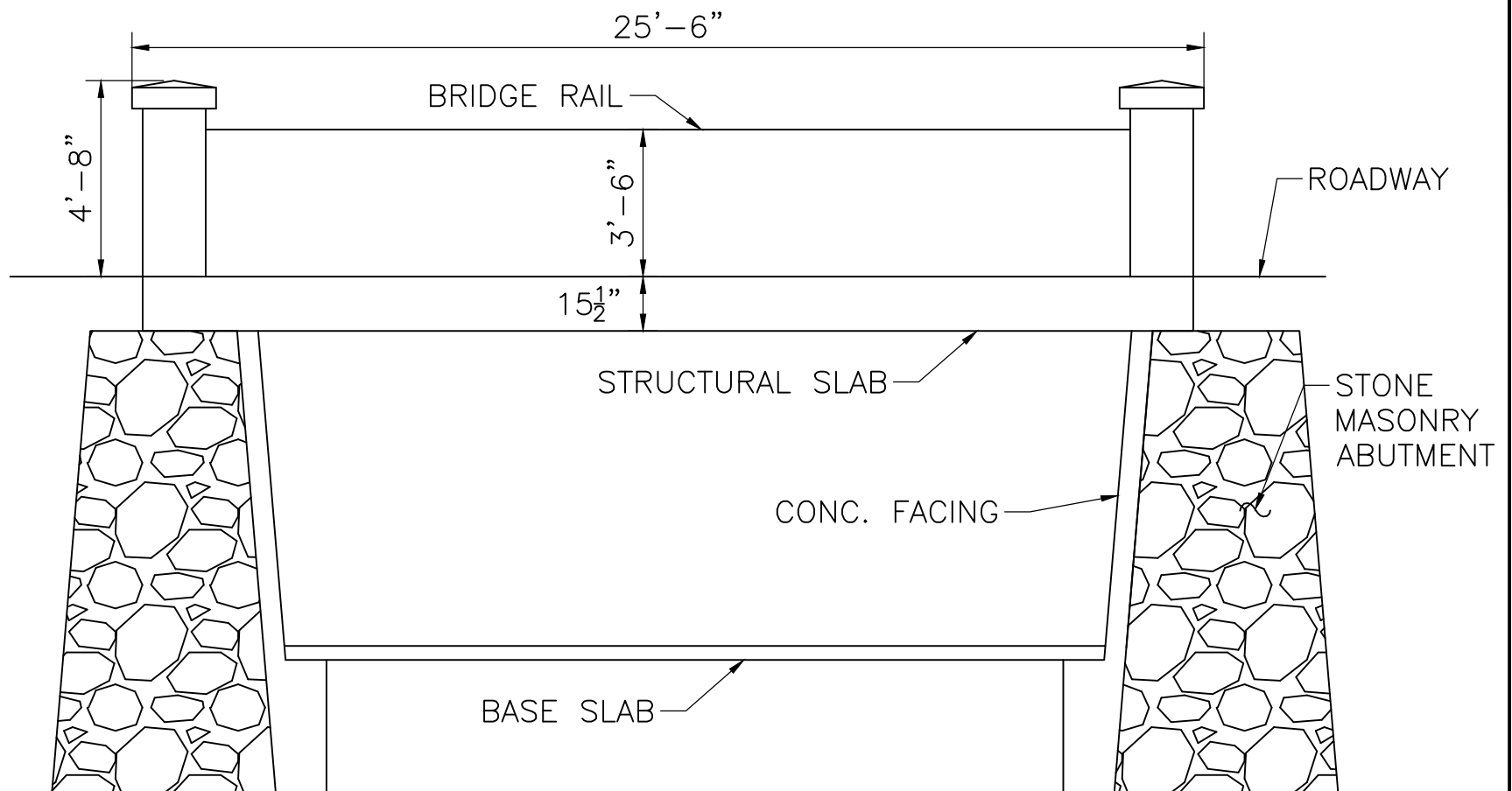
SCALE: 1/4" = 1'-0"



SINGLE SPAN CONCRETE SLAB - EXISTING LONGITUDINAL SECTION

BRIDGE NO. E-10-011
CHURCH STREET OVER KEYUP BROOK
ERVING, MASSACHUSETTS

SCALE: 1/4" = 1'-0"



SINGLE SPAN CONCRETE SLAB - EXISTING ELEVATION

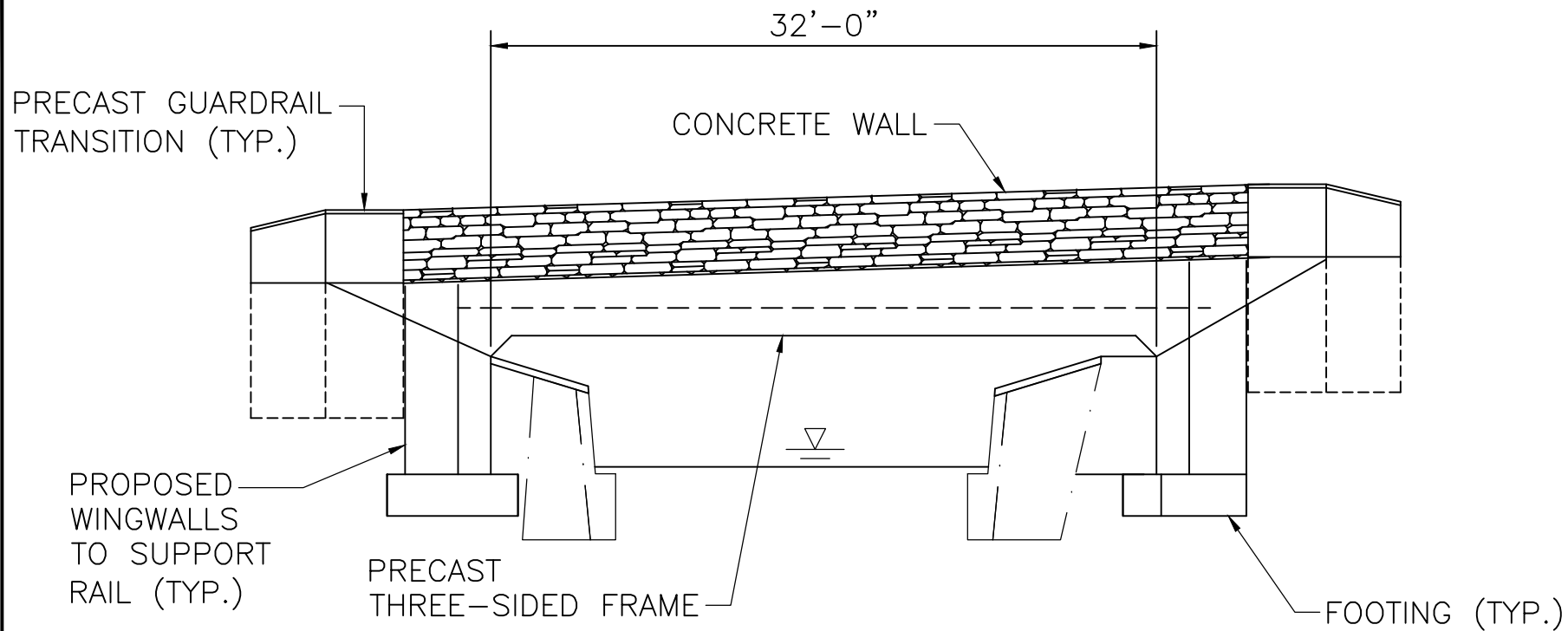
BRIDGE NO. E-10-011
CHURCH STREET OVER KEYUP BROOK
ERVING, MASSACHUSETTS

SCALE: 1/4" = 1'-0"

Weston & Sampson

7.2

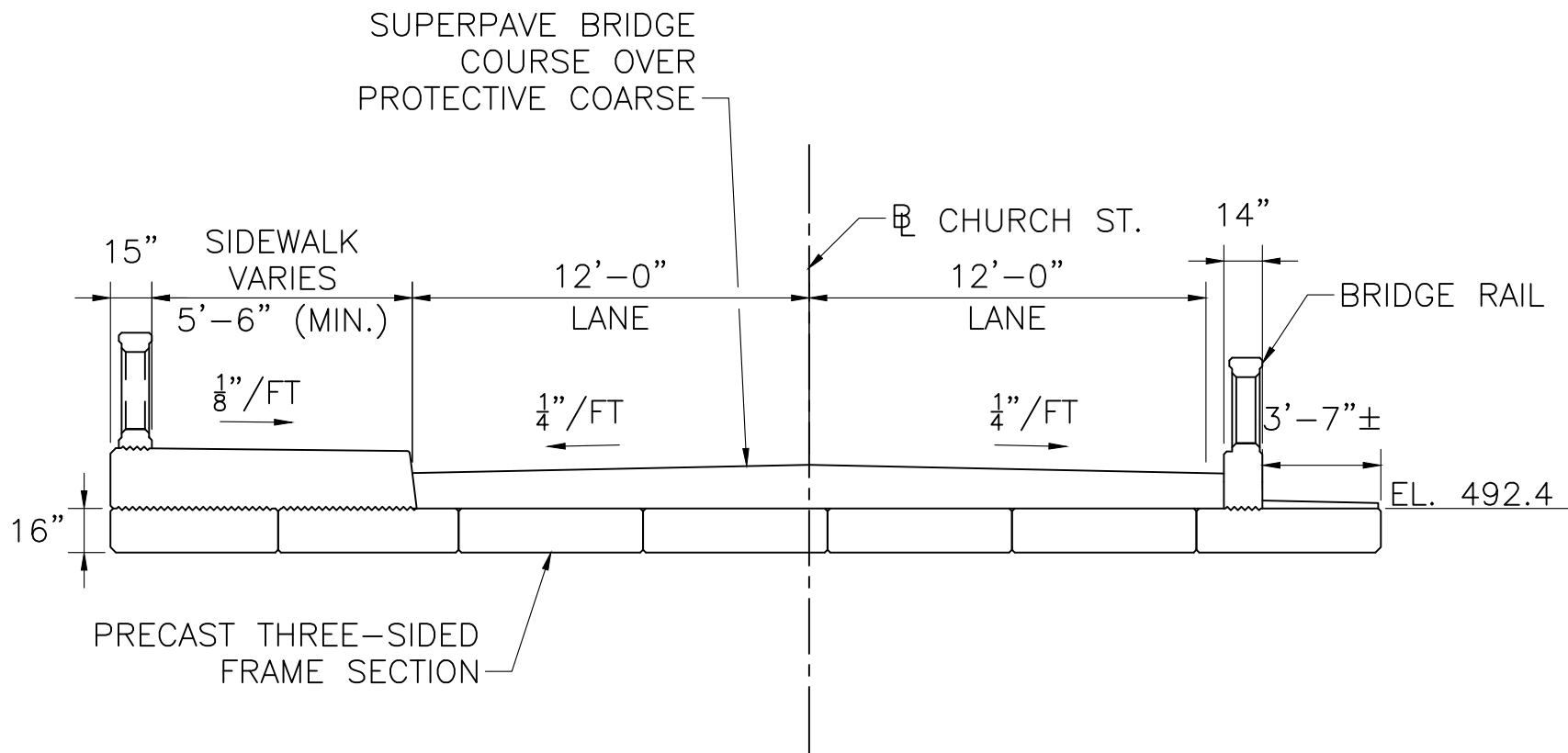
Major Views of Proposed Bridge Structure



THREE-SIDED FRAME - ELEVATION

BRIDGE NO. E-10-011
CHURCH STREET OVER KEYUP BROOK
ERVING, MASSACHUSETTS

SCALE: 1/8" = 1'-0"



THREE-SIDED FRAME - CROSS SECTION

BRIDGE NO. E-10-011
 CHURCH STREET OVER KEYUP BROOK
 ERVING, MASSACHUSETTS

SCALE: 3/16" = 1'-0"

7.3

Backup Calculations

Church Street Bridge Replacement
Erving MA

PRELIMINARY DESIGN - THREE SIDED FRAME
SUMMARY OF ESTIMATED PROBABLE CONSTRUCTION COSTS

JULY 2021

Estimated By: PJG

Checked By:

Estimated Bid Letting:
Approximate Construction Duration:

		<u>COST</u>
STRUCTURES ¹		\$ 985,000.00
ROADWAYS ¹		\$ 353,900.00
	Base Estimate:	\$ 1,338,900.00
MISC. CONTINGENCY	15 %	\$ 200,835.00
	Total:	\$ 1,539,735.00

TOTAL ESTIMATED PROBABLE CONSTRUCTION COSTS = \$ 1,540,000.00

¹ Itemized quantities provided on separate sheet

CHURCH STREET BRIDGE REPLACEMENT
BRIDGE NO. E-10-011
Erving, MA
9/10/2021


55 Walkers Brook Dr. Suite 100
Reading, MA 01867
508-698-3034

THREE-SIDED FRAME 32 FT CLEAR SPAN

ITEM	QUANTITY	UNITS	DESCRIPTION	UNIT PRICE	AMOUNT
115.1	1	LS	DEMOLITION OF BRIDGE NO. E-10-011	\$42,000.00	\$42,000.00
140.	305	CY	BRIDGE EXCAVATION	\$40.00	\$12,200.00
144.	20	CY	CLASS B ROCK EXCAVATION	\$135.00	\$2,700.00
151.1	25	CY	GRAVEL BORROW FOR BRIDGE FOUNDATION	\$50.00	\$1,250.00
151.2	75	CY	GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES	\$50.00	\$3,750.00
153.	100	CY	CONTROLLED DENSITY FILL - EXCAVATABLE	\$180.00	\$18,000.00
153.1	10	CY	CONTROLLED DENSITY FILL - NON-EXCAVATABLE	\$220.00	\$2,200.00
450.60	10	TON	SUPERPAVE BRIDGE SURFACE COURSE - 9.5 (SSC-B - 9.5)	\$285.00	\$2,850.00
450.70	10	TON	SUPERPAVE BRIDGE PROTECTIVE COURSE - 9.5 (SPC-B - 9.5)	\$285.00	\$2,850.00
482.31	70	FT	SAWING & SEALING JOINTS IN ASPHALT PAVEMENT AT BRIDGES	\$25.00	\$1,750.00
748.	1	LS	MOBILIZATION	\$29,636.00	\$29,636.00
901.2	10	CY	SHOTCRETE CHANNEL SLOPE	\$1,300.00	\$13,000.00
952.	6000	LB	STEEL SHEETING	\$3.00	\$18,000.00
991.3	1	LS	TEMPORARY TRAFFIC CONTROL	\$2,000.00	\$2,000.00
994.1	835	SF	TEMPORARY PROTECTIVE SHIELDING	\$10.00	\$8,350.00
995.01	1	LS	BRIDGE STRUCTURE, BRIDGE NO. E-10-011	\$610,000.00	\$610,000.00
900.XX	1	LS	UTILITY POLE RELOCATION	\$50,000.00	\$50,000.00
				Sum =	\$820,536.00
CONTINGENCY (% of Total)				20%	\$164,107.20
				TOTAL CONSTRUCTION COST =	\$985,000.00
*Rounded to nearest 5,000					
ESTIMATED BY: YS			CHECKED BY: CJW		APPROVED BY: SRB

Erving, MA
Church St. Bridge
Preliminary Highway Estimate
July 16, 2021

Item No.	Unit	Item Description	Unit Price	Quantity		Project Cost	
				Part.	Non Part.	Participating	Non Part.
100.	LS	SCHEDULE OF OPERATIONS	\$48,000.00	1		\$48,000.00	
101.	A	CLEARING AND GRUBBING	\$31,500.00	0.25		\$7,875.00	
102.3	HR	HERBICIDE TREATMENT FOR INVASIVE PLANTS	\$550.00	15.00		\$8,250.00	
102.33	HR	INVASIVE PLANT MANAGEMENT STRATEGY	\$210.00	7.00		\$1,470.00	
102.521	FT	TREE AND PLANT PROTECTION FENCE	\$13.00	25		\$325.00	
120.	CY	EARTH EXCAVATION	\$44.00	250		\$11,000.00	
121.	CY	CLASS A ROCK EXCAVATION	\$100.00	15		\$1,500.00	
141.1	CY	TEST PIT FOR EXPLORATION	\$100.00	40		\$4,000.00	
151.	CY	GRAVEL BORROW	\$55.00	125		\$6,875.00	
170.	SY	FINE GRADING AND COMPACTING	\$12.00	440		\$5,280.00	
180.01	LS	ENVIRONMENTAL HEALTH AND SAFETY PROGRAM	\$7,800.00	1		\$7,800.00	
180.02	HR	PERSONAL PROTECTION LEVEL C UPGRADE	\$10.00	8		\$80.00	
180.03	HR	LICENSED SITE PROFESSIONAL SERVICES	\$125.00	24		\$3,000.00	
181.11	TON	DISPOSAL OF UNREGULATED SOIL	\$41.25	10		\$412.50	
181.12	TON	DISPOSAL OF REGULATED SOIL - IN STATE FACILITY	\$66.75	10		\$667.50	
181.13	TON	DISPOSAL OF REGULATED SOIL - OUT OF STATE FACILITY	\$140.00	10		\$1,400.00	
181.14	TON	DISPOSAL OF HAZARDOUS WASTE	\$500.00	10		\$5,000.00	
184.1	TON	DISPOSAL OF TREATED WOOD PRODUCTS	\$525.00	10		\$5,250.00	
220.	EA	DRAINAGE STRUCTURE ADJUSTED	\$450.00	4		\$1,800.00	
402.	CY	DENSE GRADED CRUSHED STONE FOR SUB-BASE	\$77.14	50		\$3,857.00	
440.	LB	CALCIUM CHLORIDE FOR ROADWAY DUST CONTROL	\$0.40	400		\$160.00	
443.	MGL	WATER FOR ROADWAY DUST CONTROL	\$100.00	1		\$100.00	
450.31	TON	SUPERPAVE INTERMEDIATE COURSE - 12.5 (SIC - 12.5)	\$150.00	50		\$7,500.00	
450.42	TON	SUPERPAVE BASE COURSE - 37.5 (SBC - 37.5)	\$142.50	90		\$12,825.00	
450.60	TON	SUPERPAVE BRIDGE SURFACE COURSE - 9.5 (SSC-B - 9.5)	\$199.50	40		\$7,980.00	
452.	GAL	ASPHALT EMULSION FOR TACK COAT	\$9.63	50		\$481.50	
453.	FT	HMA JOINT SEALANT	\$1.50	600		\$900.00	
482.5	FT	SAWCUTTING ASPHALT PAVEMENT FOR BOX WIDENING	\$3.00	320		\$960.00	
506.	FT	GRANITE CURB TYPE VB - STRAIGHT	\$41.00	95		\$3,895.00	
506.1	FT	GRANITE CURB TYPE VB - CURVED	\$51.00	25		\$1,275.00	
509.	FT	GRANITE TRANSITION CURB FOR WHEELCHAIR RAMPS-STRAIGHT	\$48.00	20		\$960.00	
620.13	FT	GUARDRAIL, TL-3 (SINGLE FACED)	\$33.00	65		\$2,145.00	
628.24	EA	TRANSITION TO BRIDGE RAIL	\$4,500.00	4		\$18,000.00	
630.2	FT	HIGHWAY GUARD REMOVED AND DISCARDED	\$6.00	160		\$960.00	
697.1	EA	SILT SACK	\$212.50	4		\$850.00	
701.	SY	CEMENT CONCRETE SIDEWALK	\$69.11	40		\$2,764.40	
701.2	SY	CEMENT CONCRETE PEDESTRIAN CURB RAMP	\$80.00	10		\$800.00	
715.	EA	RURAL MAILBOX REMOVED AND RESET	\$275.00	1		\$275.00	
740.	MO	ENGINEERS FIELD OFFICE AND EQUIPMENT (TYPE A)	\$2,835.00	18		\$51,030.00	

Erving, MA
Church St. Bridge
Preliminary Highway Estimate
July 16, 2021

[illegible]

SAY \$353,900.00